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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

PHD STUDENT SEMINAR

The Incidence Algebra of Polyhedra over the Minkowski Algebra

By

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Abstract

Let V be a finite-dimensional vector space over an ordered field F. Let $\wp$ be the poset of relatively open convex polyhedral sets ordered by the face relation. The Minkowski algebra of polyhedra is an F-module generated by indicator functions of polyhedra with Minkowski multiplication defined as $f * g(x) = \sum_{a,b\in F} ab\chi\left(f^{-1}(a) \cap (x - g^{-1}(b))\right)$.

By considering the incidence algebra of the poset $\wp$ over the Minkowski algebra and various Möbius inversion formulas, we can prove the Gram-Sommerville, Gauss-Bonnet formulas and their analogs for relatively open convex polyhedra in a fundamental and unified way.

Date : 13 May 2025 (Tuesday)
Time : 3:00pm
Venue : Room 4502 (near Lifts 25/26)

All are Welcome!